

XXXV.—Notes on a small Collection of Plankton from  
New Zealand.—I.

THE collection was made by Miss Margaret Benson, D.Sc., in the Bay of Islands, New Zealand, about 35° S., 174° E. It is much to be desired that other travellers should follow this excellent example; the necessary outfit is small and inexpensive, the work is easy and clean.

Three hauls were made under different conditions, but all were at the surface and between high water and half-tide.

Haul.	Date.	Hour.	Surface temp.	Remarks.
1 A . . . .	18. vi. 06.	5 to 5.45 P.M.	54° F.	Overcast.
1 B . . . .	21. vi. 06.	9.10 P.M.	54° F.	Starlight.
1 C . . . .	23. vi. 06.	4.50 P.M.	57° F.	Clear, sunset.

As might be expected, the bulk of the catch in each case consisted of Medusæ, Copepoda, and other small Crustacea.

I. CRUSTACEA (excluding COPEPODA).  
By W. T. CALMAN, D.Sc., British Museum.

(a) CLADOCERA.

*Penilia schmackeri*, Richard.

*Penilia schmackeri*, Richard, Ann. Sci. Nat., Zool. (7) xviii. p. 344, pl. xv. figs. 5, 7, 11, 15, pl. xvi. fig. 8 (1895).

*Penilia pacifica*, Krämer, Trans. New Zealand Inst. xxvii. p. 222, pl. xxiii. figs. 1-5 (1895).

*Penilia schmackeri*, Hansen, Cladoceren u. Cirripedien, Plankton-Exp. p. 4, pl. i. figs. 1-1 b (1899); Sudler, Proc. Boston Soc. Nat. Hist. xxix. pp. 109-131, 3 pls. (1899); Richard, Bull. Mus. Oceanogr. Monaco, no. 52, p. 9 (1905).

The numerous specimens referred to this species (hauls 1 A, 1 B, and 1 C), which are all females, agree closely with the figures and descriptions of Richard and Hansen quoted above, and confirm the suggestion of Hansen that the *P. pacifica* of Krämer, from Hauraki Gulf and Port Jackson, is identical with Richard's species. The known distribution of the species includes Hong Kong, Vera Cruz (Gulf of Mexico), Beaufort (North Carolina), the Gulf of Guinea, and the Mediterranean.

*Podon polyphemoides* (Leuckart).

*Podon polyphemoides*, Poppe, Abh. naturwiss. Ver. Bremen, x. p. 298 (1889); Krämer, Trans. New Zealand Inst. xxvii. p. 221 (1895); Hansen, Cladoceren u. Cirripedien, Plankton-Exp. p. 8 (1899); Lilljeborg, Nova Acta Reg. Soc. Sci. Upsal. (3) xix. p. 633, pl. lxxxv. figs. 7-11 (1900).

Numerous females and a few males are in the collection (hauls 1 A, 1 B, and 1 C). They agree closely with Lilljeborg's description and figures. It is interesting to confirm the occurrence of this species in New Zealand waters, since it has not been recorded from any locality nearer than the Gulf of Guinea (*Hansen*).

Like the last, this is a "neritic" species, only occurring close to land; unlike it, however, it is by no means confined to the warmer seas, being found as far north as the Lofoten Islands.

## (b) ISOPODA.

*Munna* sp.

Three immature female specimens, not exceeding 1.3 mm. in length of body, are in the collection (haul 1 B). They apparently belong to an undescribed species, but in the absence of fully adult specimens it seems inadvisable to attempt to diagnose it. The antennules consist of six segments, apart from a very minute and somewhat doubtful terminal segment. The only species recorded from New Zealand is *M. neozelanica*, Chilton\*, which has five large segments and two minute terminal ones in the antennule. Chilton's species further differs from the present in its much larger size (3 mm.) and in having the female operculum broadly truncate instead of pointed.

## (c) AMPHIPODA.

*Paradexamine pacifica* (G. M. Thomson).

*Paradexamine pacifica*, Stebbing, Das Tierreich, Amphipoda, I. Gammaridea, p. 518 (1906).

Numerous small specimens (haul 1 B), none exceeding 2.5 mm. in length, appear to belong without doubt to this species, which is known from New Zealand and from East Australia.

\* Ann. & Mag. Nat. Hist. (6) ix. p. 1, pls. i. & ii. (1892).

In addition to the species mentioned above there occurred (haul 1 B) numerous specimens of a species probably belonging to the family Aoridae. None of the specimens exceed 4 mm. in length, and only in a few of the more minute are the antennules and antennae preserved. In the absence of adult specimens it does not appear possible to identify the species.

(d) MYSIDACEA.

*Pseudomma* sp.

Among a number of minute specimens of Mysidacea (haul 1 B), too immature for identification, there is one, belonging to the genus *Pseudomma*, which deserves mention, since, so far as I can discover, no species of the genus has hitherto been recorded from the surface\*. The specimen, which measures 3 mm. in length, is further remarkable in possessing on each side of the plate which represents the metamorphosed and coalesced ocular peduncles a well-defined crescentic mass of bright red pigment. In the species hitherto described the ocular pigment is completely absent. The specimen approaches *Ps. roseum*, Sars, in the shape of the antennal scale, which has the external tooth very little beyond the middle of its length, and in having four spines on the truncated distal end of the telson. It differs in the absence of distinct serrations on the margin of the ocular plate and in the presence of only three pairs of lateral denticles on the telson. These denticles are not articulated spines, but I learn from Mr. W. M. Tattersall that this is probably a character of immaturity, since in allied genera the spines are at first formed as teeth, which later become articulated.

(e) CUMACEA.

*Leptostylis* (?) *insularum*, sp. n. (Figs. 1-5 a.)

*Description of adult female*.—Total length 9.3 mm.

Carapace a little more than two sevenths of total length, nearly twice as long as deep and  $1\frac{1}{2}$  times as long as broad, its dorsal surface not strongly arched. Pseudorostrum horizontal, acute, about  $\frac{1}{4}$  of total length of carapace. Antennal notch obsolete. Ocular lobe a little broader than long, inflated, without pigment. Frontal lobe crossed by two low, rounded, crescentic, transverse ridges. Near the posterior

\* *Ps. australe* is recorded by Sars from 33 fathoms at the entrance to Port Philip, in company with Decapod larvæ. Other species are on record from depths of 45-1675 fathoms.

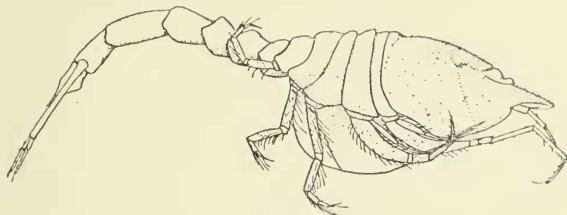
end of the fronto-lateral suture on each side is a shallow depression, and there is a median depression posteriorly between the branchial regions. Posterior margin of carapace slightly raised dorsally. The whole surface of carapace is rough with minute spiniform points and short setæ, and there is a line of minute spines running obliquely downwards and forwards on the anterior part of the lateral surface.

Posterior thoracic and abdominal somites nearly smooth. Third and fourth leg-bearing somites distinct. Posterolateral angles of the fifth rounded.

Abdomen rather stout and, including the telson, about equal in length to the cephalothoracic region. Telson a little longer than last somite, with about nine pairs of lateral spines.

Antennular peduncle extending well beyond tip of pseudo-rostrum, its three segments subequal.

Fig. 1.



*Leptostylis* (?) *insularum*, adult female, from the side.

Third maxillipeds with the ischium produced externally as a finger-shaped lobe, apparently soft-skinned, carrying a few short setæ (figs. 2 & 2 a).

First legs with basis about three fourths as long as distal segments together, with numerous and very long plumose hairs distally. Dactylus equal to carpus and a little shorter than propodus (fig. 3).

Second legs with basis about four fifths as long as the slender distal segments together, with numerous long hairs. Dactylus nearly twice and carpus four times as long as propodus. Posterior legs stout, with numerous setæ. Basis of third and fourth pairs carrying small exopodites of two segments.

Uropods slender. Peduncle twice as long as telson, with numerous short spines on its inner edge. Rami subequal, a

Fig. 2.

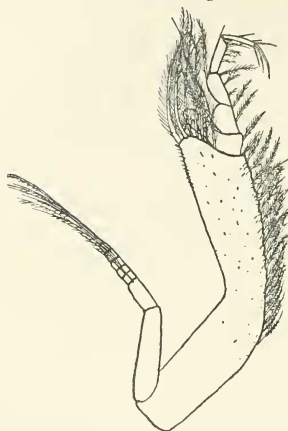


Fig. 2 a.



Fig. 3.



Fig. 2.—*Leptostylis* (?) *insularum*, ad. fem.: third maxilliped from under side. 2 a. Ischium of same, from upper side, further enlarged.

Fig. 3.—First leg.

little less than half as long as peduncle. Endopodite of three segments, the first slightly longer than second or third,

Fig. 4.

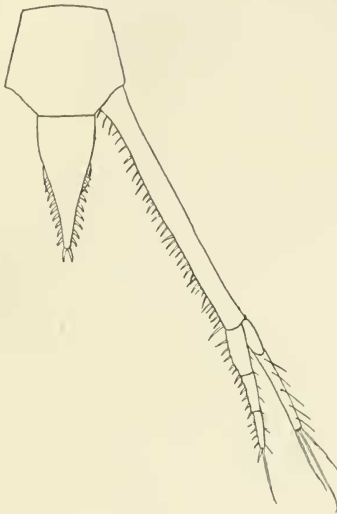


Fig. 5.

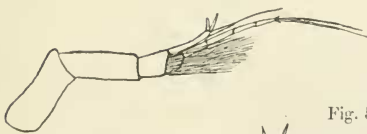


Fig. 5 a.

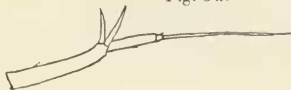


Fig. 4.—Telson and uropod.

Fig. 5.—Antennule of male. 5 a. Inner flagellum of same, further enlarged.

first with six, second with five, third with four spines on inner edge. Two unequal apical spines and a few short

setæ on outer edge. Exopodite with three slender apical spines and some setæ on outer edge (fig. 4).

*Adult male*.—Total length 9.4 mm.

Carapace less inflated than in female, more than twice as long as deep and one and two thirds as long as broad. Pseudorostrum not more than one seventh of length of carapace. The ridges and depressions described above in the female are all present and there is a slight vertical ridge on the anterior part of the side of the carapace. The surface of the carapace is nearly smooth.

Abdomen a little longer than cephalothoracic region. Telson  $1\frac{1}{2}$  times as long as last somite, strongly gibbous dorsally, with nine pairs of lateral spines.

Antennular peduncle (fig. 5) stouter than in female, third segment nearly as stout and less than half as long as the preceding, bearing distally a brush of sensory filaments. Outer flagellum of five segments, the basal one dilated. Inner flagellum (fig. 5*a*) of three segments, the last very minute and the first having a pair of stout spines at its distal end.

Antennæ as long as the body, of normal structure.

Structure and proportions of third maxillipeds and legs much as in female. All the legs except the last pair bear exopods and have the basal segment expanded.

Peduncle of uropods about one and four fifths as long as telson, with numerous spines on its inner edge. Exopod slightly longer than endopod and about two fifths of length of peduncle. Endopod with seven spines on inner edge of first segment, six on second, and three on third.

First and second pairs of pleopods well developed, biramous; exopod of two segments and endopod unsegmented.

*Remarks*.—In the possession of vestigial exopodites on the second and third legs of the female this species agrees with those commonly referred to *Leptostylis*, and I accordingly place it provisionally in that genus. It must be admitted, however, that this character is open to suspicion as a generic distinction in view of its variability, as described by Bonnier in his *Diastylopsis* (?) *dubia*. In other respects the new species differs considerably from *L. longimana*, the type of the genus *Leptostylis*, notably in having the telson of moderate size, with more than one pair of lateral spines. I have elsewhere described a species (*L. walkeri*, Bull. Mus. d'Hist. Nat. Paris, 1907, p. 121) having numerous lateral spines on the telson, which is nevertheless closely allied to certain undoubted species of *Leptostylis*, and the same character is found in several species which Zimmer has referred to that genus.

*Diastylis neo-zealandica*, G. M. Thomson (Journ. Linn. Soc., Zool. xxiv. p. 268, pl. xviii. figs. 1-11, 1892), of which I have examined a specimen kindly sent me by Mr. Thomson agrees closely with the present species in the form and armature of the telson and uropods, in having minute exopods on the third and fourth pairs of legs, and in the form of the ischium of the third maxilliped (the original figure of this appendage is defective in this point). The two species are at once distinguished, however, by the form of the carapace, which in Mr. Thomson's species is obliquely costate.

*Leptostylis* sp.

A species closely allied to, but apparently distinct from, Zimmer's *Leptostylis thileniusi* (Zool. Jahrb., Abth. Syst. xvii. p. 449, 1902) is represented by a number of males (the largest only 3.3 mm. in length) and a single young female. As all the specimens are in poor condition, however, I do not attempt to describe the species fully. It differs from that described by Zimmer in having the cephalothoracic region not longer than the abdomen, the third free thoracic somite not strongly produced backwards at the sides, so that there is only a slight interval between the second and third pairs of legs, and the telson armed with only three pairs of lateral spines. The two forms agree in the armature of the abdomen, with ventral spines and dorsal setæ, and apparently in the disposition of the ridges on the carapace, although these are difficult to see in our specimens. They further agree in the remarkable and characteristic structure of the third maxilliped, which, however, I interpret somewhat differently from Dr. Zimmer. The large rounded plate which he describes as a process of the second segment (basis) of the limb is, according to my observations, an outgrowth from the third segment or ischium, and is an enlargement of the digitiform process of that segment observed in *L. insularum*. It is, indeed, adherent along its proximal border to the distal border of the basis; but this connexion is simply a continuation of the articulation between the basis and ischium.

(f) DECAPODA.

*Pinnotheres* sp.

A single male specimen belonging to this genus occurred in haul 1 B. In the present state of our knowledge the identification of solitary specimens of this sex appears to be



hardly possible. Two species of the genus, *P. pisum* (L.) and *P. novæ-zealandiæ*, Filhol, are mentioned in Hutton's 'Index Faunæ Novæ Zealandiæ' (1904, p. 250). I am not aware of any observations on the swimming-powers of the males, but the occurrence of a specimen in a tow-net gathering is unexpected.

## II. CHÆTOGNATHA.

By G. HERBERT FOWLER, B.A., Ph.D.

Two specimens only occurred in the collection, both in haul 1 A. They were immature, showing neither ovaries nor testes, and no trace of the corona ciliata was left. Formulæ\* :—

10	25	8	3	3
10	23	9	3	2-3

While the formulæ and the flaccid body suggest *hexaptera*, the presence of a neck-constriction behind the head and the apparent extension of the lateral fins are against this determination; further, the tips of the jaws are clearly not of hexapteran type. On the other hand, no species, even at 10 mm. in length, has been recorded with so few teeth. The specimens seem pretty clearly to belong to an undescribed species, but it is eminently undesirable to give a name to two immature examples. In the hope that further specimens may be captured elsewhere in Southern Seas are appended the diagnostic characters :—

Head small, separated from the trunk by a neck-constriction; no collarette present. Body flaccid, thickest about the middle of the total length, tapering gradually forwards, diminishing rapidly near the tail-septum. Longitudinal muscles broad but weak, lateral fields narrow. Tail-segment narrow, 23 to 25 per cent. of the total length (including tail-fin). Anterior fins long, (?) widest about the middle of their length, reaching anteriorly to the ganglion, posteriorly almost to the posterior fin. Posterior fins fairly long, (?) about as wide as the anterior fins, widest in front of the tail-septum; about two thirds are on the trunk and one third on the tail. Jaws slender, the oldest with slightly curved tips; tip small. Vestibular ridge undeveloped; corona ciliata not seen.



\* For these and the terminology employed should be consulted 'Siboga' Expedition, Report on the Chaetognatha, by G. Herbert Fowler. Leiden, 1906.

The lateral fins were a good deal folded and the epidermis had become detached from the body-wall, so that it was not possible to ascertain the exact boundaries of the fins; the rays were very inconspicuous.

XXXVI.—On some new Species of the Coleopterous Genus *Mimela*. By GILBERT J. ARROW.

THE species of this brilliant genus of Rutelidæ, although ranging as far as Japan and Java, appear to flourish to a special and remarkable degree in the eastern part of the Himalayan region, Burma, and Tonkin. Half the fifty described species are inhabitants of that region, and eight more are here described from the same part, all of them contained in the British Museum collection. One from Western and another from Eastern China have been added.

*Mimela lævigata*, sp. n.

Læte viridi-metallica, nitida, supra paulo magis aureo-viridis, elytrorum sutura angustissime violacea; capite irregulariter punctato, prothoracis et elytrorum lateribus grosse punctatis, supra fere lævigatis, pygidio fere lævi, punctis nonnullis marginalibus, corpore subtus glabro, metasterni lateribus solum crebre punctatis; mesosterno sat longe producto, haud acuto, tibiis anticis extus sinuatis, haud dentatis.

Long. 21–22 mm.; lat. max. 12 mm.

*Hab.* Sikkim (*Sir J. D. Hooker*); Mungphu (*E. Atkinson*).

Entirely bright metallic green, with the upper surface rather more golden green and the extreme edge of the elytral suture violet. It is a large species, of elongate oval form and almost devoid of hairy clothing. The head is irregularly punctured, the clypeus rugosely. The pronotum is scarcely visibly punctured on its disk, but strongly and confluent at the sides. The scutellum is short and smooth. The elytra are almost without punctures on the inner half, but very strongly and irregularly punctured on the outer half, and the pygidium is very smooth, only exhibiting a few punctures near its circumference. The prosternal process is broad and triangular at the summit, and the mesosternal process is moderately long but rather blunt. The front tibiæ are without a lateral tooth in either sex.

Our collection contains one specimen of each sex.